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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,300	09/12/2003	Robert Louis Cupo	24-5-9-21	7453

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EXAMINER	
JONES, PRENELL P	

ART UNIT	PAPER NUMBER
2619	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/661,300	CUPO ET AL.	
	Examiner	Art Unit	
	Prenell P. Jones	2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 September 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Arguments

1. Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

a) Applicant has amended claims 5 and 6; thereby correcting previously indicated 112, second paragraph issue. Therefore, Examiner withdraws previously indicated 112, second paragraph rejection.

b) Applicant argues that the cited prior art fails to teach or suggest "monitoring each frame for a predefined interleaver synchronizing pattern; and continuously monitoring each frame for predefined interleaver synchronizing pattern at periodic frame intervals" as stated by the current amendment of independent claims 1, 3, 5 and 6. Examiner agrees, and has performed an additional search.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 2, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent No. 5,889,759 ("McGibney") in view of US patent No. 6,556,639 B1 ("Goldston et al.") and further in view of US patent No. 6,693,958 B1 ("Wang et al.").

Regarding claims 1 and 5, McGibney teaches a method and system for synchronizing interleaving blocks in an OFDM communication system, the method comprising the steps of monitoring each received frame for a predefined synchronizing pattern (as to synchronize to a block with a know data pattern as synchronization pattern), entering a synchronization state upon detecting the predefined synchronizing pattern (generally within a first signal acquisition state) (See Fig. 5, Col. 5, line 64 to Col. 6, line 11, continuously monitoring blocks until timing error is zero).

McGibney teaches substantially all the claimed invention but did not disclose expressly the particular application involving limitations of "wherein a guard period separates any two adjacent symbols".

Goldston teaches a OFDM method of synchronization pattern/training sequences detection utilizing control bits representing interleaver synchronization word wherein it is

common practice in OFDM system that by applying guard band/guard interval with a cyclically used waveform of a effective symbol interval separates any two adjacent symbol intervals to reduce interferences (See Fig. 2, Col. 1, lines 59 thru col. 2, line 20, col. 4, line 20-62, col. 5, line 64 thru col. 6, line 23, col. 8, line 45 thru col. 9, line 25).

At the time the invention was made, therefore, it would have been obvious to one of ordinary skill in the art to combine Goldston with McGibney in order to obtain a method and system for synchronizing interleaving blocks in an OFDM communication system and to take advantage of a guard band/interval with a cyclically used waveform of a effective symbol interval separates any two adjacent symbol intervals.

The motivation to do so would have been to reduce the symbol interferences by a guard band applied to the data, which reduces interference associated with adjacent stations (adjacent symbols) as suggested by Goldston (col. 4, line 29-38).

McGibney and Goldston teach substantially all the claimed invention but did not disclose expressly the particular application involving limitations of "continuously monitoring each received frame for the synchronizing pattern at periodic frame intervals, and returning to the monitoring step if the synchronizing pattern is not detected at the periodic frame interval for a predefined number of blocks".

Wang et al. teaches a similar synchronization process for the forward error correction decoding wherein it is a common practice of synchronization process to continuously (repeatedly) monitor (in an acquisition state) each received frame for the synchronizing pattern (fixed known sync pattern) at periodic frame intervals (covering a sync interval), and returning to the monitoring step (back to acquisition state) if the

synchronizing pattern is not detected at the periodic frame interval (a sync interval) for a predefined number of symbol blocks (See Col. 8, lines 18-67).

At the time the invention was made, therefore, it would have been obvious to one of ordinary skill in the art to be motivated to combine Wang et al. with McGibney and Goldston in order to obtain a method and system for synchronizing interleaving blocks in an OFDM communication system and to take advantage of a common practice of synchronization process to repeatedly search for the synchronizing pattern at a sync interval, and back to acquisition state if the synchronizing pattern is not detected at the sync interval for a predefined number of symbol blocks.

The motivation to do so would have been to repeatedly search for the synchronizing pattern at a sync interval, and back to acquisition state if the synchronizing pattern is not detected at the sync interval for a predefined number of symbol blocks to achieve convergence after signal acquisition, as suggested by Wang et al. in Col. 8, lines 18-67.

Regarding claims 2 and 4, McGibney further teaches that the predefined synchronization condition is the detection of a predefined cyclic prefix pattern (See Fig. 5, Col. 5, line 64 to Col. 6, line 11).

5. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent No. 5,889,759 ("McGibney") in view of US patent No. 6,556,639 B1 ("Goldston et al.") and further in view of US patent No. 6,693,958 B1 ("Wang et al.") as applied to claims 1, 2, 4 and 5 above, and further in view of Sato et al (US Pat 5,596,582).

Regarding claims 3 and 6, as indicated above, combined McGibney, Goldston and Wang teach a method and system for synchronizing interleaving blocks in an OFDM communication system, the method comprising the steps of monitoring each received frame for a predefined synchronizing pattern (as to synchronize to a block with a know data pattern as synchronization pattern), OFDM method of synchronization pattern/training sequences detection utilizing control bits representing interleaver synchronization word wherein it is common practice in OFDM system that by applying guard band/guard interval, and synchronization process for the forward error correction decoding wherein it is a common practice of synchronization process to continuously monitor each received frame for the synchronizing pattern at periodic frame intervals, and returning to the monitoring step if the synchronizing pattern is not detected at the periodic frame interval for a predefined number of symbol blocks.

However, McGibney, Goldston and Wang fail to teach or suggest "returning to monitoring step if predefined/predetermined interleaver synchronizing pattern is detected at an unexpected location for a predefined number of blocks.

In an OFDM synchronizing environment, Sato et al. teaches a general OFDM method with synchronization pattern detection wherein it is common practice in OFDM system that a guard interval with a cyclically used waveform of a effective symbol interval separates any two adjacent symbol intervals to reduce the symbol interferences (See Fig. 2, Col. 5, lines 42-57), and returning to the monitoring step if the synchronizing pattern is detected at an unexpected location for a predefined number of sequences/blocks (See Fig. 11, Col. 10, lines 45 to Col. 11, line 15).

At the time of the invention was made, therefore, it would have been obvious to one of ordinary skill in the art to be motivated to implement returning to the monitoring step if

predefined/predetermined interleaver synchronizing pattern is detected at an unexpected location for a predefined number of blocks with the combine teachings of Wang et al. with McGibney and Goldston in order to further manage OFDM synchronizing process as to minimize delay.

Conclusion

2. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prenell P. Jones whose telephone number is 571-272-3180. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Wing Chan can be reached on 571-272-7493. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Prenell P. Jones

November 1, 2007

11/9/07

WING CHAN
SUPERVISORY PATENT EXAMINER